**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): An active hybrid transformer circuit for use in bi-directional metallic cable communication to separate a transmit (TX) signal and a receive signal (RX), comprising:

a current driver for the transmit signal;

a load resistor connected to a first common node connected to a one terminal of the current driver;

a first end of a replica resistor connected to the first common node;

a transmission path connected to the first common node;

a second end of the replica resistor connected to a second common node;

a replica driver connected to the second common node and directly connected to the second end of the replica resistor; and

the second common node, connecting the replica driver to the replica resistor, and being connected to a receive side.

2. (Original) An active hybrid transformer circuit as claimed in claim 1, wherein a current ratio between the current driver and the replica driver is represented by a complex number.

3. (Original) An active hybrid transformer circuit as claimed in claim 2, wherein the complex number has a real part and an imaginary part, at least one of the real part and the imaginary part being variable.

4. (previously presented): An active hybrid transformer circuit as claimed in claim 1,

wherein the current ratio is given by:

$$-(R_D//Z_L) / (R_D//Z_L + R_{REP}),$$

where $R_D$ is representative of a resistance value of the load resistor; $R_{REP}$ is a resistance value of the replica resistor; and $Z_L$ is an impedance seen from a transmitter/ receiver to the transmission path circuit.

5. (Original) An active hybrid transformer circuit as claimed in claim 4, wherein the current ratio is represented by the complex number which has a real part and an imaginary part, at least one of the real part and the imaginary part being variable.

6. (Original) An active hybrid transformer circuit as claimed in claim 1, further comprising:

a circuit element which includes at least one of a capacitor, an inductor, and a resistor and which is connected in parallel with the replica driver.

7. (Original) An active hybrid transformer circuit as claimed in claim 6, wherein the circuit element is variable.

8. (Original) An active hybrid transformer circuit as claimed in claim 4, wherein the replica driver comprises:

a digital filter circuit which varies at least one of the real part and the imaginary part and which has an impedance circuit.

9. (Original) An active hybrid transformer circuit as claimed in claim 8, wherein a real part and an imaginary part of an impedance in the impedance circuit are equal to those of the impedance $Z_L$, respectively.

10. (previously presented): An active hybrid transformer circuit as claimed in claim 1, wherein the current driver and the replica driver are implemented by a digital-to-analog converter (DAC) of a current output type.

11. (Original) An active hybrid transformer circuit as claimed in claim 1, wherein the replica driver is a digital to analog converter connected to a digital filter trained by a training signal.

12.(currently amended): An active hybrid transformer circuit for use in bi-directional metallic cable communication to separate a transmit (TX) signal and a receive signal (RX), comprising:

a current driver for the transmit signal;

a load resistor connected to a first common node connected to a one terminal of the current driver;

a first end of a replica impedance connected to the first common node;

a transmission path connected to the first common node;

a second end of the replica impedance connected to a second common node;

a replica driver connected to the second common node and directly connected to the second end of the replica impedance; and

the second common node, connecting the replica driver to the replica impedance, and being connected to a receive side.

13. (Currently Amended) An active hybrid transformer circuit as claimed in claim 12, wherein the current ratio a has only a real part and the replica impedance $Z_{REP}$ is given by:

$$Z_{REP} = ((1 / \alpha) - 1) (R_D // Z_L),$$

where $R_D$ is representative of a resistance value of the load resistor; and $Z_L$, is an impedance seen from a transmitter/ receiver to the transmission path circuit.